JL

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,138	11/25/2003	Kevin Li	NC34682	9453

4955 7590 04/07/2006

WARE FRESSOLA VAN DER SLUYS &
ADOLPHSON, LLP
BRADFORD GREEN BUILDING 5
755 MAIN STREET, P O BOX 224
MONROE, CT 06468

EXAMINER	
ADDY, ANTHONY S	

ART UNIT	PAPER NUMBER
2617	

DATE MAILED: 04/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/723,138	LI, KEVIN
	Examiner	Art Unit
	Anthony S. Addy	2617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 January 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *01/20/2006*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to applicant's amendment filed on January 20, 2006. **Claims** 1-24 are pending in the present application.

Information Disclosure Statement

2. The references listed in the Information Disclosure Statement filed on January 20, 2006 have been considered by the examiner (see attached PTO-1449 form or PTO/SB/08A and 08B forms).

Response to Arguments

3. Applicant's arguments filed on January 20, 2006 have been fully considered but they are not persuasive.

In response to applicant's argument that, "Yoshida fails to teach a system that effectuates received diversity within a mobile communication device" examiner respectfully disagrees and maintains that Yoshida meets the limitations as claimed. Examiner reiterates that Yoshida teaches a cellular phone (i.e. a mobile communication device) has a multiple-band receiver and a multiple-band transmitter, wherein the multiple-band receiver can receive, for example, 900 MHZ and 1.8 GHz radio frequency signals, among others (see p. 2 [0025]). Yoshida further teaches the multi-band transmitter and receiver may include single band, dual band, tri-band and additional band capability and the multi-band transmitter can transmit 900 MHZ and 1.8 GHz radio frequency signals (see p. 2 [0025]). Thus it is substantially clear the teachings of Yoshida meets the limitation of "a system that effectuates received diversity within a

mobile communication device" since Yoshida teaches a cellular phone including a multiple-band receiver and a multiple-band transmitter, wherein the multiple-band receiver and transmitter can receive and transmit, for example, 900 MHZ and 1.8 GHz radio frequency signals, among others.

In response to applicant's arguments that, the recitation "receive diversity" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Additionally, in response to applicant's argument that "Examiner has failed to establish a prima facie case of obviousness," the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the combination of Yoshida and Standke provide adequate motivation as taught for example by Standke (see *Standke*, col. 1, line 64 through col. 2, line 3). Furthermore it appears applicant is arguing against the references individually,

however it has been held that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In view of the above, the 35 U.S.C. 103(a) rejections using Yoshida, Standke and Eggleston with regard to claims 1-24 are proper and are maintained as repeated below. The rejections are made **FINAL**.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1, 2, 5-11, 13, 14, 16-19, 20-22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yoshida et al., U.S. Publication Number 20020081987 (hereinafter Yoshida)** and further in view of **Standke et al., U.S. Patent Number 6,694,150 (hereinafter Standke)**.

Regarding claims 1, 2 and 22, Yoshida teaches a system that effectuates receive diversity within a mobile communication device (see paragraph 0023, lines 1-3, paragraph 0025, lines 1-11 and Fig. 1), comprising: a first antenna that facilitates reception of signals in at least one of a PCS band, cellular band, a Korean PCS band, and a China PCS band (see paragraph 0025, lines 1-11, paragraph 0027, lines 1-22 and Fig. 1; where antenna 10 for reception of cellular signals in a cellular phone is

shown); and a second antenna that facilitates reception of signals in a GPS band (see paragraph 0028, lines 1-7, paragraph 0043, lines 1-2 and Fig. 1; where antenna 21 for receiving signals in a GPS band is shown).

Yoshida fails to explicitly teach a second antenna that facilitates reception of signals in a GPS band and at least one of the bands received by the first antenna, wherein tuning of the second antenna depends upon a signal type relayed to the second antenna.

Standke, however teaches a multiple band wireless telephone with multiple antennas, wherein an external antenna is tuned for a multi-band response to access both telephone and GPS signals and a diplexer or electronic switch separates the telephone and GPS signals (see col. 1, lines 38-41). Standke further teaches the external antenna receives telephone signals from a remote telephone base station and also receives GPS signals from a constellation of remote GPS satellites and the signal separator separates the telephone signals and the GPS signals, and applies the telephone signal to the telephone transceiver and the GPS signals to the GPS receiver (see col. 1, line 64 through col. 2, line 3 and Fig. 1; where an external antenna 110 is shown for receiving cellular and GPS band signals).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Yoshida with the system of Standke to include a second antenna that facilitates reception of signals in a GPS band and at least one of the bands received by the first antenna, to allow the mobile communication device to be

shared in cellular radio communication and the reception of GPS signals, while maintaining the quality of signal reception in both cellular and GPS modes.

Regarding claim 5, Yoshida in view of Standke teaches all the limitations of claim 1. In addition, Yoshida teaches a system, further comprising: a first tuning component that facilitates tuning the second antenna for reception of signals in a GPS band (see paragraph 0028, lines 1-7 and Fig. 1; where filter 25 and GPS receiver 20 constitutes a first tuning component that facilitates tuning the second antenna 21 for reception of signals in a GPS band); and a second tuning component that facilitates tuning the second antenna for reception of signals in at least one of the bands received by the first antenna (see paragraph 0025, lines 1-11, paragraph 0027, lines 1-22 and Fig. 1; where multiple-band receiver 11, filters 23 and 24 constitutes a second tuning component that facilitates tuning the second antenna).

Regarding claim 6, Yoshida in view of Standke teaches all the limitations of claim 5. In addition, Yoshida teaches a system, further comprising a RF switch that facilitates coupling the second antenna to one of the first tuning component and the second tuning component (see paragraph 0014, lines 15-22, paragraph 0062, lines 1-6 and Fig. 3; where RF switches 26 and 27 are shown).

Regarding claim 7, Yoshida in view of Standke teaches all the limitations of claim 5. In addition, Yoshida teaches a system, the RF switch being one of a PIN-diode, a MEMS switch, and a FET switch (see paragraph 0014, lines 15-22, paragraph 0062, lines 1-6 and Fig. 3; where RF switches 26 and 27 are shown and it is inherent the RF switches 26 and 27 are one of a PIN-diode, a MEMS switch, and a FET switch).

Regarding claim 8, Yoshida in view of Standke teaches all the limitations of claim 1. In addition, Yoshida teaches a system, further comprising: a first receiving component that facilitates at least one of transduction, modulation, and processing of a signal in at least one of the bands received by the first antenna (see paragraph 0025, lines 1-11 and paragraph 0027, lines 1-22); and a second receiving component that facilitates at least one of transduction, modulation, and processing of a GPS signal (see paragraph 0028, lines 1-7, paragraph 0043, lines 1-7).

Regarding claim 9, Yoshida in view of Standke teaches all the limitations of claim 1. In addition, Yoshida teaches a system, further comprising a RF switch that facilitates coupling the second antenna to one of the first receiving component and the second receiving component (see paragraph 0014, lines 15-22, paragraph 0062, lines 1-6 and Fig. 3; where RF switches 26 and 27 are shown).

Regarding claim 10, Yoshida in view of Standke teaches all the limitations of claim 9. In addition, Yoshida teaches a system, the RF switch being one of a PIN-diode, a MEMS switch, and a FET switch (see paragraph 0014, lines 15-22, paragraph 0062, lines 1-6 and Fig. 3; where RF switches 26 and 27 are shown and it is inherent the RF switches 26 and 27 are one of a PIN-diode, a MEMS switch, and a FET switch).

Regarding claim 11, Yoshida in view of Standke teaches all the limitations of claim 1. In addition, Yoshida teaches a system, further comprising a component that determines frequency of a signal desirably received by the second antenna (see paragraph 0028, lines 1-7 and Fig. 3; where a GPS reception band-pass filter 25 is shown).

Regarding claim 12, Yoshida in view of Standke teaches all the limitations of claim 1. Yoshida further teaches a system, further comprising an emergency component that automatically configures the second antenna to receive a GPS signal upon transmitting data to an emergency number (see paragraph 0007, lines 1-11, paragraph 0028, lines 1-3 and Fig. 1; where a GPS receiver 20).

Regarding claim 13, Yoshida in view of Standke teaches all the limitations of claim 1. Yoshida further teaches a system, comprising: a mobile telephone (see paragraph 0023, lines 1-6 and Figures 1-2).

Regarding claim 16, Yoshida in view of Standke teaches all the limitations of claim 1. In addition, Yoshida teaches a system, further comprising: a first switch that couples one of a first tuning component and a second tuning component to the second antenna, wherein the first tuning component facilitates reception of a GPS signal on the second antenna and the second tuning component facilitates reception of a signal in at least one of the bands received by the first antenna on the second antenna (see paragraph 0062, lines 1-6 and Fig. 3); a second switch that couples one of a first receiving component and a second receiving component to the second antenna, wherein the first receiving component facilitates one of transduction, modulation, and processing of a GPS signal and the second receiving component facilitates one of transduction, modulation, and processing of a signal in at least one of the bands received by the first antenna (see paragraph 0062, lines 1-6 and Fig. 3); and a control component that relays commands to at least one of the first switch and second switch to facilitate a desirable coupling, the coupling based at least in part upon a type of signal

desirably received by the second antenna (see paragraph 0063, line 1 through paragraph 0066, line 9 and Fig. 3).

Regarding claims 17 and 20, Yoshida teaches a method for effectuating receive diversity within a mobile communication device (see paragraph 0023, lines 1-3, paragraph 0025, lines 1-11 and Fig. 1), comprising: providing a first antenna that facilitates reception of a signal in at least one of a PCS band, a cellular band, a Korean PCS band, and a China PCS band (see paragraph 0025, lines 1-11, paragraph 0027, lines 1-22 and Fig. 1; where antenna 10 for reception of cellular signals in a cellular phone is shown); providing a second antenna that facilitates reception of a signal in a GPS band (see paragraph 0028, lines 1-7, paragraph 0043, lines 1-2 and Fig. 1; where antenna 21 for receiving signals in a GPS band is shown); and determining whether a signal in a GPS band is desirably received by the second antenna (see paragraph 0028, lines 1-7, paragraph 0043, lines 1-7 and paragraph 0052, line 1 through paragraph 0056, line 4).

Yoshida fails to explicitly teach tuning the second antenna to facilitate reception of a signal in at least one of the bands received by the first antenna if reception of a signal in a GPS band is not desirable.

Standke, however teaches a multiple band wireless telephone with multiple antennas, wherein an external antenna is tuned for a multi-band response to access both telephone and GPS signals and a diplexer or electronic switch separates the telephone and GPS signals (see col. 1, lines 38-41). Standke further teaches the external antenna receives telephone signals from a remote telephone base station and

also receives GPS signals from a constellation of remote GPS satellites and the signal separator separates the telephone signals and the GPS signals, and applies the telephone signal to the telephone transceiver and the GPS signals to the GPS receiver (see col. 1, line 64 through col. 2, line 3 and Fig. 1; where an external antenna 110 is shown for receiving cellular and GPS band signals).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Yoshida with Standke to include tuning the second antenna to facilitate reception of a signal in at least one of the bands received by the first antenna if reception of a signal in a GPS band is not desirable, to allow the mobile communication device to be shared in cellular radio communication and the reception of GPS signals, while maintaining the quality of signal reception in both cellular and GPS modes.

Regarding claims 14, 18 and 19, Yoshida in view of Standke teaches all the limitations of claims 1 and 17. Yoshida in view of Standke fails to explicitly teach a radiating element that is coupled to a transmission line, wherein length of the transmission line is selectable between at least two lengths and altering an electrical length of a resonating element associated with the second antenna to tune the second antenna.

However, the examiner takes Official Notice that it is very well known in the art to alter or vary the length of a transmission line coupled to an antenna element for tuning purposes of the antenna. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to alter or vary the length of a transmission line

coupled to an antenna of Yoshida and Standke, to tune the multiple antennas to operate in a desired band.

Regarding claim 21, Yoshida teaches a method for modifying a mobile communication device to enable diversity, comprising: providing a mobile communication device that includes a first antenna tuned to receive a signal in at least one of a PCS band, a cellular band, a Korean PCS band, and a China PCS band, (see paragraph 0025, lines 1-11, paragraph 0027, lines 1-22 and Fig. 1; where antenna 10 for reception of cellular signals in a cellular phone is shown) and a second antenna tuned to receive a signal in a GPS band (see paragraph 0028, lines 1-7, paragraph 0043, lines 1-2 and Fig. 1; where antenna 21 for receiving signals in a GPS band is shown); coupling the second antenna to a first switch (see paragraph 0062, lines 1-3 and Fig. 3); further coupling the first switch to one of a first tuning circuit that facilitates tuning the second antenna for reception of a signal in a GPS band (see paragraph 0062, lines 1-6 and Fig. 3; where switch 27 is shown coupled to GPS reception band-pass filter 25); coupling the second antenna to a second switch (see paragraph 0062, lines 1-6 and Fig. 3; where antenna 21 is shown coupled to switch 26); and further coupling the second switch to one of a first receiving component that facilitates one of processing, transduction, and modulation of a signal in a GPS band (see paragraph 0062, lines 1-6 and Fig. 3).

Yoshida fails to explicitly teach a second tuning circuit that facilitates tuning the second antenna for reception of a signal in at least one of the bands received by the first antenna.

Standke however teaches a multiple band wireless telephone with multiple antennas, wherein an external antenna is tuned for a multi-band response to access both telephone and GPS signals and a diplexer or electronic switch separates the telephone and GPS signals (see col. 1, lines 38-41). Standke further teaches the external antenna receives telephone signals from a remote telephone base station and also receives GPS signals from a constellation of remote GPS satellites and the signal separator separates the telephone signals and the GPS signals, and applies the telephone signal to the telephone transceiver and the GPS signals to the GPS receiver (see col. 1, line 64 through col. 2, line 3 and Fig. 1; where an external antenna 110 is shown for receiving cellular and GPS band signals).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Yoshida with Standke to include a second tuning circuit that facilitates tuning the second antenna for reception of a signal in at least one of the bands received by the first antenna, to allow the mobile communication device to be shared in cellular radio communication and the reception of GPS signals, while maintaining the quality of signal reception in both cellular and GPS modes.

Regarding claim 24, Yoshida teaches a system that facilitates receive diversity within a mobile communication device (see paragraph 0023, lines 1-3, paragraph 0025, lines 1-11 and Fig. 1), comprising: a first antenna that facilitates reception of signals in at least two frequency bands (see paragraph 0025, lines 1-11, paragraph 0027, lines 1-22 and Fig. 1; where antenna 10 for reception of cellular signals in a cellular phone is shown); a second antenna that facilitates reception of signals in a GPS band (see

paragraph 0028, lines 1-7, paragraph 0043, lines 1-2 and Fig. 1; where antenna 21 for receiving signals in a GPS band is shown).

Yoshida fails to explicitly teach a second antenna that facilitates reception of signals in a GPS band and at least one of the frequency bands received by the first antenna; and a tuning component that dynamically tunes the second antenna to the frequency currently received by the first antenna for at least one frequency band when reception of a GPS signal is not desirable.

Standke, however teaches a multiple band wireless telephone with multiple antennas, wherein an external antenna is tuned for a multi-band response to access both telephone and GPS signals and a diplexer or electronic switch separates the telephone and GPS signals (see col. 1, lines 38-41). Standke further teaches the external antenna receives telephone signals from a remote telephone base station and also receives GPS signals from a constellation of remote GPS satellites and the signal separator separates the telephone signals and the GPS signals, and applies the telephone signal to the telephone transceiver and the GPS signals to the GPS receiver (see col. 1, line 64 through col. 2, line 3 and Fig. 1; where an external antenna 110 is shown for receiving cellular and GPS band signals).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify the system of Yoshida with the system of Standke to include a second antenna that facilitates reception of signals in a GPS band and at least one of the frequency bands received by the first antenna; and a tuning component that dynamically tunes the second antenna to the frequency currently received by the first

antenna for at least one frequency band when reception of a GPS signal is not desirable, to allow the mobile communication device to be shared in cellular radio communication and the reception of GPS signals, while maintaining the quality of signal reception in both cellular and GPS modes.

6. Claims 3, 4, 15 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yoshida et al., U.S. Publication Number 20020081987 (hereinafter Yoshida)** and **Standke et al., U.S. Patent Number 6,694,150 (hereinafter Standke)** as applied to claims 1 and 22 above, and further in view of **Eggleston, U. S. Patent Number 6,414, 640 (hereinafter Eggleston)**.

Regarding claims 3, 4, 15 and 23, Yoshida in view of Standke teaches all the limitations of claims 1 and 22. Yoshida in view of Standke fails to explicitly teach the second antenna is a top-mounted inverted F-antenna and the inverted F-antenna exhibits circular polarization characteristics.

However, the use of a top-mounted inverted F-antenna exhibiting circular polarization characteristics is very well known in the art as taught for example by Eggleston. Eggleston teaches a top-mounted inverted F-antenna (TOPIFA) used in a mobile station, and wherein the top-mounted inverted F-antenna assembly exhibits circular polarization characteristics (see col. 3, lines 35-47, col. 3, lines 64-67, col. 5, lines 39-52 and Fig. 3). According to Eggleston, the antenna assembly is used in a mobile station operable pursuant to conventional cellular operation as well as to receive GPS signals used for positioning purposes and because of the circular polarization

characteristics of the resultant antenna transducer, a relatively high antenna gain characteristic is provided by the antenna transducer (see col. 6, lines 29-41).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to implement the antenna assembly of Eggleston in the communication system of Yoshida and Standke in order to realize a relatively high antenna gain characteristic.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony S. Addy whose telephone number is 571-272-7795. The examiner can normally be reached on Mon-Thur 8:00am-6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duc M. Nguyen can be reached on 571-272-7503. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Anthony S. Addy
March 22, 2006

3/22/06
ELISEO RAMOS-FELICIANO
PRIMARY EXAMINER